



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

A NOTE* ON THE RELATION AND AESTHETIC VALUE OF THE PERCEPTIVE TYPES IN COLOR APPRECIATION

By E. J. G. BRADFORD

ABSTRACT

The preface of this note consists of a brief statement of certain experimental results bearing on the order of preference for certain colors, together with the reliability of this preference order, and on the frequency of occurrence of the perceptive types among university students. An analysis of the four principal perceptive types suggests that there are two distinct types within the one which has been called "Associative," namely the 'Sensational-Associative' and the 'Emotional-Associative.' Physiological factors are advanced as likely to affect the perceptive type of an individual. The æsthetic value of the types is considered on the basis of the above mentioned analysis.

The substance of this note deals with certain general considerations concerning the 'perceptive' types and their relations. These considerations have arisen incidentally in the course of some experimental work; hence only the briefest summary of the methods and results of the experiments is here necessary as an introduction to the theoretical matter which follows it.

The Experiments

The Subjects.—These consisted of twenty-six university students, eighteen of them graduates; thirteen from each of the Arts and Science faculties.

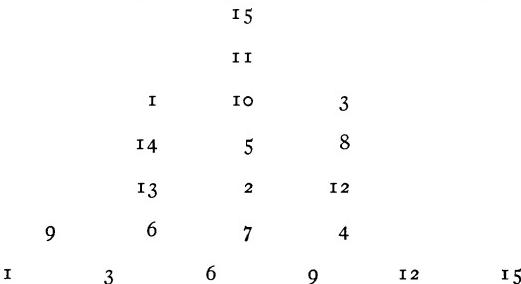
Method.—The subjects were presented with a set of fifteen rectangular pieces of paper each about 30 square inches in area. These papers were numbered in order to avoid difficulties arising from individual differences in color naming. The colors were arranged in a row and the subjects were

* From the Psychological Laboratory of King's College, London, England.

instructed to write down the numbers of the colors in order of preference. When this had been done the next instructions were given, namely to write down against each the reasons for liking or disliking that color.

The Results

Preference Order.—In order to ascertain the average preference order the following procedure was adopted. The fifteen possible positions of a color were divided into five groups whose limiting positions were 1-3, 4-6, 7-9, 10-12, and 13-15. The median position for each color was found, these medians were then grouped together according as they themselves fell within these same limits. The fact that no color has a median position lower than 10.2 confirms the general impression of the subjects, namely that on consideration hardly any colors are really disagreeable when taken by themselves.



In the above polygon the columns are proportional to the number of colors whose median positions fall between the limits mentioned. The colors were as follows: No. 9, dark blue; No. 1, saturated green; No. 14, chocolate brown; No. 13, pale blue; No. 6, slate grey with bluish tinge; No. 15, saturated crimson; No. 11, pale green; No. 10, coffee brown; No. 5, bluish green; No. 2, ink red; No. 7, cinnamon brown; No. 3, pale pinkish brown; No. 8, bluish green; No. 12, pink; No. 4, yellowish green. The figures inside each column of the polygon are the numbers of the colors falling in that group, in order of preference reading from the top downward.

An inspection of the polygon will show that loss of saturation tends to lower the position of a color *e.g.*, dark blue No. 9 comes within the first group while No. 13 comes within the second; Nos. 14 and 10, 7 and 3 are further instances. The admixture of a small proportion of another color has a similar lowering effect, *e.g.*, Nos. 5 and 1, also 14 and 7. Regarded objectively, the first eight colors in the

preference order are pure, while the last six seem to be adulterated with some foreign element.

Cohn had previously put forward the view that increase of saturation tended to make a color more pleasing,¹ although Major² obtained results which were antagonistic to those of Cohn. The above results tend to confirm Cohn's results although the details of the method used were different.

Reliability of the Preference Order.—Three subjects were again tested for their order of preference after considerable intervals, in order to determine the constancy of their preferences. A second estimate was obtained after an interval of fourteen days and a third estimate after a lapse of twelve months.

Subject	Correlation coefficients between		
	1st and 2nd	1st and 3rd	2nd and 3rd
H. S.	.81 ± .06		
E. B.	.94 ± .02	.87 ± .04	.88 ± .04
L. S.	.94 ± .02	.81 ± .06	.83 ± .05

$$\text{The formula used was } \rho = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Differences of Perceptive Type.—In order to see if training influenced the mode of color appreciation, the subjects were classified according to their faculty. The total number of answers given by the thirteen subjects in each group were classified and the results were as follows:

Group	Physiological answers	Objective answers	Associative answers	Character answers
Arts.....	59	34	35	35
Science.....	40	48	40	32

Although the differences under Physiological and Objective answers are big, they can hardly be regarded as significant since in neither case is the mean greater than twice its probable error.

¹J. Cohn. Gefühlston und Sättigung der Farben, *Philos. Stud.*, XV., 1900, 279-286.

²D. R. Major. "On the Affective Tone of Single Sense Impression," *Amer. Jour. Psychol.*, VII., 1895, 57-77.

[The value of applying mathematical methods to experiments dealing with aesthetics is questioned by some workers in this field. However, if averages are employed, there should be some check on them before they are made the basis of any conclusions. Take an example from some fairly recent work. Winch³ bases his conclusions regarding the color preferences of school children, on averages which at first sight appear large but which on investigation fail to reach the required standard of significance, in other words they are less than three times their probable error.]

The 'Perceptive' Types.—A psychosis may be regarded either from its cognitive or affective aspect, and this is most certainly true of those psychoses which give rise to an appreciative judgment or opinion. The perceptive types in aesthetic appreciation fall naturally into two groups according as the sensational or emotional elements play a predominant part in deciding the subject's attitude towards the color. Sensational elements are to the fore in cases where the subject gives an Objective or Physiological answer, whereas it is the emotional elements which predominate when Character and some Associative answers are given. This difference will be made clearer by considering each type singly.

In what may be called the Physiological psychosis there is a complex of sensational elements (visual, tactile, kinæsthetic and visceral sensations and images) together with their emotional accompaniments. These sensational elements are purely personal; they are identified with the subject's own bodily sensations and are characterised by a minimum of objectivity. The sensational character of the Physiological answer does not depend necessarily on the absence or weakness of the emotional elements but rather on the fact that the subject has not reached a sufficiently advanced stage to enable him to differentiate the emotional from the sensational elements in consciousness, and hence to give a bias to either one.

There seems to be no *a priori* reason to assume that the emotional elements are stronger in a psychosis which leads to a Physiological answer, than in one which leads to a Character answer; the change from one type to another depends rather on an increasing power of introspective analysis than on an increase in the strength of the emotional elements. Introspection in the former type makes evident the

³ W. H. Winch, Color Preferences of School Children, *Brit. Jour. Psychol.*, .III, 1909, 42-65.

sensational elements which are far more easily noticed than are the emotional complexes which form the basis for the latter type of judgment. Differences in the strength of these emotional elements are due to temperament, and temperament, it is generally admitted, is not in the normal subject liable to change during a lifetime; yet subjects who give two types of answer to the same color and who seem satisfied only when two answers have been given can hardly be expected to have changed temperamentally during so short a space of time. For example a particular shade of yellow is called sickly when it is obvious to an observer that the subject who gives this answer, is strongly affected by the emotion of disgust. Another subject when presented with the same color might say that for him this color typified the emotion of disgust, a sort of hypostatized "disgust," a Character answer. Why this difference of answer when both subjects experience the same emotion? It may be argued that the word 'sickly' is more often used by the first subject than is the word 'disgust' and hence a difference in type is really only a sign of a difference between the affective vocabularies of the two subjects. The fact that the word sickly is more commonly used by the one subject than by the other may be taken as good evidence that this subject is limited by his inability to differentiate the sensational from the emotional elements, and that it is this lack of ability in differentiation and not his vocabulary that is the prime cause of a difference of type. Character subjects are often in difficulty when asked to express this appreciation in words, those who can do so are registered as of the Character type, those who cannot, 'break down' to a lower type because of their inability to find a word quite suitable to their state of mind; not being able to fix an emotional complex with a word, they fall back on the more easily defined sensational elements.

The above mentioned differentiation may be accomplished in either of two ways, which result respectively in two types, the Objective and the Associative. The Objective subject separates these elements by totally neglecting one of them. The sensational elements (color sensations) seem to be attracted from the self to the object and, as it were, replace that object and thus are regarded as being quite impersonal; the object thus becomes of no intrinsic value so far as the judgment is concerned. With the Associative on the other hand, the association of mental elements with the object tends rather to draw the object towards the self, and no 'depersona-

tion⁴ of the elements results. The object as such becomes an integral part of the complex which determines the appreciation, and in some cases the introduction of the object seems essential to the creation or augmentation of the emotional tone.

Answers which are classified as Associative, really differ very much among themselves when examined introspectively. There appear to be two types grouped together under the head "Associative." The distinction between them depends on the predominance of the sensational or the emotional elements respectively. For example, a red color will suggest a 'red flag,' because of their common sensory element, by a process somewhat akin to complication, *e.g.*, a red flag is more than a red patch; it has substance, and hence it implies touch sensations or at least a combination of perspective and color sensations. On the other hand it may be that the red excites the same emotional complex as does the 'red flag,' in this case the emotional elements predominate and although it may not be strictly correct to say that they act as the medium of association, yet they do seem to favor that particular association. (There seems to be some justification for this last assumption when abnormal subjects are considered, for it is well known that the memory of an alternating personality is dependent on the emotional tone of the subject at that particular time.) These two forms of the Associative type may be called the Sensational-Associative and the Emotional-Associative; the former might possibly develop into the latter because the introduction of the object might tend to reinforce the emotional elements in consciousness, and thus reinforced the subject would more easily distinguish them.

That some colors are more potent than others in arousing the emotions is undoubtedly, and it is these colors which first enable the subject to differentiate out the emotional elements which once noticed, as it were, almost in vacuo, will be more apparent when encountered in less easily analysed complexes. This provides one way in which advance from a lower to a higher type can take place. However, the same color is not equally potent for all subjects, probably because of the differences in sensitivity of the color apparatus of the eye.⁵ For

⁴ Bullough has suggested the term 'exteriorisation' as a label for this process. It is admittedly a rather barbarous term but it is difficult to find another which is equally suitable unless "depersonation," which term is here used.

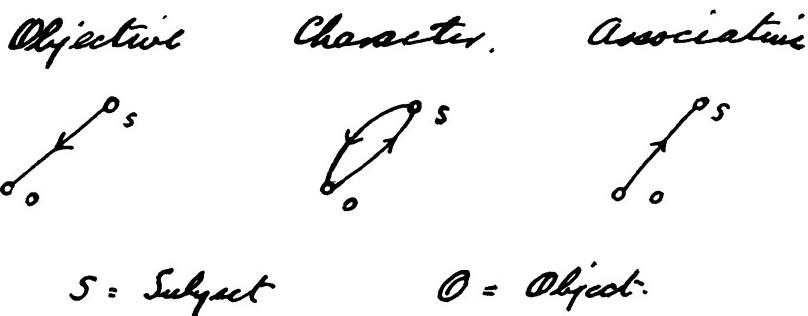
⁵ Since the above was written it has been shown by experiment that fairly large differences of sensitivity to color exist. (See L. R. Geissler, Experiments in Color Saturation, *Amer. Jour. Psychol.*, XXIV., 1913.)

instance a red which is styled "glaring" by one subject, may by another be called "cosy," because the red apparatus of the one is much more sensitive than that of the other. This difference in sensitivity may even be so great as to change the type of answer, thus a yellowish green might be "washy" for one subject, and "sickly" for another, because the one was more sensitive to the green than the other. The one would see a weak *green*, the other would see an impure *yellow* and not a *green*. It may be noted in passing that this same factor is probably largely responsible for individual differences in color naming. Past experience is another factor which influences the cognition of a color, especially those who are of the Associative type would tend to be influenced in this way. The effects of this factor are seen in such associations as 'green—vegetation' and 'yellow green—quinine' which also afford a good example of how closely connected the Perceptive types actually may be. The association 'green—vegetation' probably would be given by a subject in whose consciousness the sensational elements predominated; introspection alone could decide the validity of this assumption; whereas the association 'yellow-green—quinine' undoubtedly would be accompanied by emotional elements of far greater strength than those accompanying the former association. This second association shows the transition stage between the Associative type and the Physiological, from which by a process of association the mental content is pushed into the objective zone. The quinine association has a minimum of objectivity, it is still somewhat personal, a characteristic of the Physiological type, while the vegetation association is marked by far greater objectivity, in fact the personal element seems almost absent.

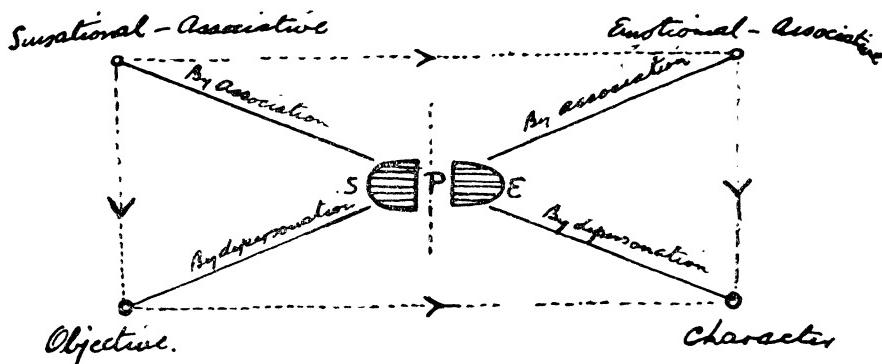
The Character type brings us to a stage where the emotional elements have successfully undergone the process of 'depersonation' either directly from the Physiological or indirectly by means of association. The Character type is like the Objective in that the process of depersonation releases certain mental elements from the self, but it differs in that it is the emotional and not the sensational elements which are thus liberated. For example, a pinkish buff, such as No. 3, by a Physiological subject would be called 'sickly,' his attention being largely to his own person rather than to the color. But an Objective subject would style it 'indefinite or impure, satisfactory neither as a pink nor as a buff,' thus showing how the sensational elements, color sensations, are considered as being intrinsically

a part of the color. The Character subject would say that it suggested 'baseness, meanness or fawning,' thus showing that this subject sees in the object a certain emotional tone which is really part and parcel of his own consciousness. Besides the similarity due to depersonation of the mental elements the Character and Objective types both have the characteristic of evaluation though their standards be quite different, the former has an ethical and the latter an hedonic standard.

Physiological subjects react to a color with motor manifestations, *e.g.*, facial expressions, and these seem to be the sole effect of that confused complex of sensational and emotional elements of which the Physiological psychosis is composed. The conative tendency of an Associative subject seems to be entirely satisfied by the uncritical acceptance of some object appropriate to the state of mind induced by the color presented. The conative tendency in the Objective subject is not satisfied by the analysis of the sensational elements; he must proceed to the simple judgment of good, bad or indifferent. Character subjects take up an attitude of evaluation towards the emotional elements ascribed to the color, and by a process of hypostatisation are led to react towards the color as if it were a person possessed of these same qualities. For instance the subject when in the presence of a person who is 'hard and keen' has a particular emotional disposition in a nascent condition; a color which is 'hard and keen' causes him to feel sympathetically 'hard and keen' besides feeling somewhat affected by the previously mentioned disposition. Thus there is first a movement towards objectivity followed by a movement towards subjectivity comparable to the two processes manifest singly in the Objective and Associative types respectively.



To summarize, it may be said that the four types of appreciation all develop from the Physiological by the application of two different processes to the two species of mental elements found in consciousness.



The above diagram shows graphically the relations between the various types.

S = Sensory elements.

E = Emotional elements.

P = Physiological.

The dotted lines are to show that the Character type may be approached directly from the Physiological or indirectly through the Objective or Associative channels. The justification for this assumption is that certain Character subjects gave two reasons for appreciation, sometimes the second reason was Physiological, sometimes Objective and sometimes Associative; showing that in some cases at least the character attitude was nearer to the Associative and Objective than it was to the Physiological.

The Esthetic value of the types. It is rather difficult to classify the types according to aesthetic value because both the attitude of the subject and the content of his consciousness are involved.

It seems safe to say that the Sensational-Associative type has no value at all, since it is characterised neither by its emotional content, by the differentiation of mental elements, by abstraction, by depersonation nor yet by the fusion of the differentiated elements with the self.

The Physiological type is characterised by a psychosis in which the emotional elements are present but remain undifferentiated.

The Objective type, so far as mere attitude goes, is closer

to that of æsthetic appreciation than are the previous types, in that it is characterised by an initial depersonation but the process has been applied to the wrong material.

The Emotional-Associative has a claim on the ground of the content of its consciousness; yet the interposition of an object as a means of releasing this content from the self seems hardly to be the correct method to lead to the attitude of æsthetic appreciation.

The Character type alone has any claim to the title 'æsthetic'; and even it lacks that relation of fusion between the self and the object of appreciation, which partly at least depends on the emotional sympathy between the object and the self. It is certain that the Character type is the most highly developed of the types. The Objective and Emotional-Associative are partially developed and hence can fairly be said to rank next. The Physiological represents the crude undeveloped content of experience, while the Sensational-Associative can hardly lay claim to be called 'appreciation' at all.

The order which suggests itself from these considerations is the following:

1. Character.
2. {Objective.
 | Emotional-Associative.
3. Physiological.
4. Sensational-Associative.

Reading downwards from those of most to those of least æsthetic value.